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ABSTRACT

The community college is an important avenue by which a large number of people gain access to higher education opportunities. Roughly one-half of all students enrolled in college programs attend community colleges. Unfortunately, about half of the students who attend community colleges leave before completing a program of study. The purpose of this study was to examine the nature of the relationship between measures of learning, study strategies, and student persistence. A sample of 169 students, consisting of recent high school graduates enrolled full-time at the community college who had declared a major, were the focus of the investigation. The study is descriptive in nature, and uses the LASSI instrument to investigate whether pre-existing conditions are associated with differences among subjects measured on dependent variables. A total of 169 students who had voluntarily enrolled in a community college orientation program completed the LASSI as a requirement of the program. Of the 169 students in the program, the 125 who had graduated in 2000 or 2001, were enrolled full-time, and had declared a major were the students whose data were evaluated. Findings indicated that motivation explained approximately 6-7% of the variance in measures of course persistence, while anxiety explained 3-4% of variance. (Contains 62 references.) (Author/NB)

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ED 470 463

THE RELATIONSHIP BETWEEN LEARNING AND STUDY SKILLS AND STUDENT PERSISTENCE IN A COMMUNITY COLLEGE

A Dissertation

Presented to

The Faculty of the Curry School of Education

University of Virginia

In Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

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ABSTRACT

The community college has become an important avenue by which a large number of people gain access to higher education opportunities. Unfortunately, about half of the students who attend community colleges depart before completing a program of study. This study sought to address the problem of persistence in the community college.

The purpose of this study was to examine the nature of the relationship between measures of learning, study strategies and student persistence. A sample of 169 students was considered. Recent high school graduates, enrolled full-time at the community college, who had declared a major were the focus of this investigation. These group characteristics were used because previous studies of persistence predictors suggested that age, enrollment status and intent were the most important predictors of student persistence. An ex post facto design was used in the study. The dependent variables were course persistence and program persistence. The independent variables were the scales of the Learning and Study Strategies Inventory (LASSI) (Weinstein, Palmer & Schulte, 1987). Data were analyzed using the Statistical Package for

the Social Sciences (SPSS Version 10). Multiple regression procedures were employed.

The findings were: (1) Motivation and concentration were significant predictors of course persistence; (2) Motivation explained approximately 6 to 7% of the variance in measures of course persistence in the stepwise model but concentration was excluded from the model; (3) Anxiety and self-testing were significant predictors of program persistence; (4) While anxiety explained about 3 to 4% of the variance in program persistence in the stepwise model, self-testing was excluded.

The research contributes to understanding of the problem of persistence in the community college by providing evidence of the nature of the relationship of motivation and anxiety to student persistence.

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CHAPTER 1

INTRODUCTION

Background

The Community College Mission

In the early nineties, the Secretary's Commission on Achieving Necessary Skills (SCANS) suggested that the American educational system should address the responsibilities that students assume as workers and citizens (U.S. Department of Labor, 1991). SCANS asserted that certain foundation skills and competencies are essential for all. Basic competencies in reading, writing, math, speaking and listening are essential to build a foundation for life-long learning. Self-management and the ability to learn complement these foundation skills. Furthermore, effective individuals exhibit interpersonal skills and possess the ability to allocate resources, manage information, and understand and use various systems and technologies.

Institutions of higher education are uniquely well suited to helping students develop the skills and competencies suggested by SCANS. David Pierce (1993), past president of the American Association of Community

Colleges, in an essay on the role of higher education in America, suggests six aims for higher education:

- To train a skilled, intelligent, creative, and responsible workforce.
- To transmit, sustain, and extend the arts and humanities, the scientific tradition, the historical record, and other aspects of our living culture.
- To support a citizenry that participates responsibly in community affairs including public governance and cares about our country and the world.
- To provide a forum for integrating a multitude of peoples and synthesizing a wealth of ideologies.
- To be a resource for people searching for ideas and information on solving social, economic, political, and scientific problems.
- To give individuals access to lifelong learning in a changing world.

Pierce (1993) concludes, "The open door of the community college is the access point to postsecondary education for all members of the community. This is often the most meaningful expression of equality in a community. This access must be supported by appropriate financial aid policies. It must be made real by the provision of

remediation programs, occupational programs, and transfer programs" (p. 1).

Roughly one-half of all students enrolled in college programs attend community colleges (Cohen & Brawer, 1996). Unlike students in a four-year college who share a single, common goal of attaining a bachelor's degree, community college students have a variety of reasons for their educational pursuits. Accordingly, community colleges have a much broader mission than four-year colleges. Traditional freshman/sophomore level coursework is offered for students intending to transfer. Community colleges also provide two-year training, retraining for career changing individuals, remedial/developmental coursework, continuing education and other types of course offerings. Community college students are much more diverse in terms of their age, backgrounds, preparation, and educational objectives than four-year college students (Cohen & Brawer, 1996).

Student persistence

Student *persistence* (individual choice) and student *retention* (institutional objective) both allude to a student's staying in college from term to term. One's choice of term is often dependent on the perspective from which one considers the benefits of staying. These terms,

though different in the manner described, are used more or less interchangeably here.

Student retention has been identified as a priority concern at many institutions of higher education (Noel, 1985; Phillips, 1982). Institutions are increasingly held accountable for their stated mission and the retention of students. Tinto (1987, 1993) reports that more students will leave college than will stay to complete a degree. Retention data reveal that approximately 70% of four-year college freshmen persist after the first year (Tinto, 1993). While open enrollment policies ensure that a greater number of individuals have an opportunity to attend community college, many students' first college experience appears to end prematurely. Slightly more than fifty percent of community college freshmen persist into the second year (Tinto, 1993). Many of these students make a decision to leave in the first six weeks of the semester according to Blanc (1983). The high rate of attrition at the community college is troubling given the community college's rapidly expanding role in post-secondary education.

A student must be retained in the college in order to reach goals, complete a degree, receive placement in the workforce or to transfer to a four-year college. Societal

and monetary rewards for the individual are proportional to educational attainment. Some academics have questioned the ethics of admitting students who are likely to fall short of their educational objectives without adequate institutional support and the collateral effects on these students as life-long learners. Through a process called "cooling-out" large numbers of students are taught to attribute their failures to their own inadequacy (Zwerling, 1976).

From an institutional perspective, the retention of students is imperative to institutional health. When students fail to achieve or to persist, the utilization of resources - including lost revenue and increased recruitment costs due to student departure - are questioned by policy makers. Legislators are increasingly concerned that taxpayers' money is well spent. Burke (2000) reported that 37 states have or will tie performance to funding for higher education institutions.

In an effort to respond to calls for accountability, community college administrators have suggested several indicators of effectiveness. Student goal attainment, fall-to-fall persistence, degree completion rates, workforce placement and transfers have been suggested as important indicators (Johnson, 1997). Persistence is a particularly

attractive indicator because it involves a complex interplay between a student's academic achievement and his intended goals. Accordingly, increasing rates of student retention/persistence has become a major goal in community colleges and four-year institutions. Understanding the factors that influence student persistence is an important first step towards this goal.

Problem

Lenning, Beal and Sauer (1980b) suggest four major groups of factors that may be related to student attrition or retention: student characteristics (academic and demographic), institutional characteristics, interactions (between individuals and the institution), and external forces.

The focus of the majority of retention studies done to date has been on presage variables as predictors of student persistence and achievement. Several student attributes, including high school GPA, age, ethnicity, prior educational attainment and socioeconomic status, have been shown to predict persistence for students in four-year and community colleges (Feldman, 1993). Feldman (1993) reported that, in order of importance, high school GPA, age, full-time/part-time status and ethnicity were predictors of

retention of freshman students one year after initial enrollment. An institutional self-study of students at Piedmont Virginia Community College (PVCC) between 1994 and 1999 revealed that recent high school graduates at the college were more likely to be enrolled full-time, take classes during the day at the main campus and receive financial aid (Head, 1999). Forty-five percent of recent high school graduates - in contrast to twelve percent of all PVCC students - were enrolled in one or more developmental classes. The average college GPA for recent high school graduates was 2.559 compared to 3.014 for the general student body. Thirteen and one-half (13.5) percent of recent high school graduates received a W or I grade on average each term, as compared to 11.8% of all students. Although recent high school graduates make up a relatively small part of the total student body at PVCC, the resources focused on this group in the form of financial aid and remediation efforts suggest that their retention should be the focus of college efforts.

For many students an involuntary separation from the college occurs because of academic difficulty that is directly related to adjusting to the demands of college (Tinto, 1993). The adjustment to college is particularly difficult for recent high school graduates as they make a

transition from a familiar educational setting to a new educational environment. Fortunately, some of these students are academically successful and persist from one term to the next until they attain their goals. The degree to which these students understand and have internalized the learning process might explain their persistence.

While, the college is unlikely to exercise much direct influence over pre-enrollment factors, the community college could exert considerable influence over learning process variables. Students most likely to depart from the community college for reasons attributable to learning process deficiencies should be identified early in their first term of enrollment. Appropriate intervention strategies could then be employed by the institution to address shortcomings. Unfortunately, the relationship between these learning process variables and student persistence is not well understood.

Purpose

This study seeks to determine if student persistence is related to remediable learning process variables, as measured by the *Learning and Study Strategies Inventory* (LASSI)(Weinstein, Palmer & Schulte, 1987). Are LASSI subscale scores on student attributes such as attitude

towards school, motivation and anxiety related to measures of student course persistence and program persistence? Simply put, are a student's measurable process attributes related to the likelihood that the student will stay in school?

The process variables measured by the LASSI are considered important because, together the student and the college can influence these factors through well-planned interventions. Persistence in a course or a program of study involves student choices related to the attainment of academic, career and/or personal goals.

This study will answer the following research questions:

1. What is the nature of the relationship between process variables (LASSI sub scores) and students' course persistence?
2. What is the nature of the relationship between process variables (LASSI sub scores) and students' program persistence?

Rationale

The reasons for conducting this study are two-fold: first, to better understand the nature of the student persistence problem and then, to suggest ways of refining

existing student services programs that might encourage student persistence.

A fundamental goal of educational research should be to improve our understanding of a clearly observable phenomenon such as student attrition. This study seeks to contribute to that goal by providing insight into the nature of the relationship between several learning process factors and student persistence.

It is hoped that if students without successful learning behaviors can be identified and assisted to increase productive behaviors, these students will persist. The rate of departure of students from the community college system for reasons related to academic difficulty would be reduced.

The LASSI, a psychological readiness indicator, may be used to complement the pre-enrollment factors currently used to target students for early intervention by student services personnel. In order to achieve this particular aim, it would be useful to rank the relative importance of each of the sub scores as an achievement or persistence predictor variable.

Students' understanding of their own attitudes towards learning (as reported by LASSI scores) can be the basis for developing both individual and institutional strategies

that are the most appropriate. Students and guidance personnel can work together to develop programs to address student retention/persistence issues.

Limitations

Program persistence is only to be observed for one semester. A clearer picture of persistence might be obtained if the students' progress was tracked over the course of two or more years. This study controls for only three presage factors known to predict student persistence. Any relation between process variables and persistence might be biased by one or more, uncontrolled presage factors. Participants in the Freshman Experience orientation (for whom LASSI scores are available) might not be representative of the entire population of recent high school graduates and are certainly not representative of the student body as a whole.

Although the intent of students involved in the study at the start of a term is to complete a program of study, non-academic factors might be involved in a student's choice to give up during the middle of a term (course persistence) or not to enroll in subsequent terms (program persistence).

The results of the analyses do not imply cause and effect.

Definition of Terms

Course persistence is successful completion of each course for which a student registers at the start of the term. Successful completion of a course results in the student receiving a grade of A, B, C, or to lesser extent D. Grades of R, F, U, W or I don't reflect success (even though a student might complete the course, as in the case of the F grade).

Program persistence is continuous enrollment at the college from one term to the next by a student. A time frame for program persistence may be specified to reflect the period of interest. In this study fall-to-spring program persistence will be considered.

Learning process variables are defined as the 10 scales measured by the *Learning and Study Strategies Inventory* (LASSI)(Weinstein, Palmer & Schulte, 1987): anxiety (ANX), attitude (ATT), concentration (CON), information processing (INP), motivation (MOT), selecting main ideas (SMI), self-testing (SFT), study aids (STA), test strategies (TST), and time management (TMT).

Organization of the Study

The study will be organized in five chapters as follows:

Chapter 1 - Introduction

Chapter 2 - Review of the Literature

Chapter 3 - Research Methodology

Chapter 4 - Results

Chapter 5 - Summary, Discussion, and Recommendations

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

The purpose of this review of the literature is three-fold: to present a historical overview, to describe existing theoretical frameworks, and to present findings of previous research on student persistence. The LASSI measures variables related to a student's cognitive and effort-related behaviors, as well as, student goal orientation. Several of these same factors are identified as being related to psychological or academic outcomes that are tied, either directly or indirectly, to student persistence/attrition through an interactive process referred to as academic integration. First, a historical overview of the growth and significance of the community college system is presented. The problem of student persistence within colleges is framed within the context of the educational accountability movement and institutional effectiveness measures developed in response to that movement. Next, theoretical attrition/persistence models and learning process models are discussed. Finally, the

findings of studies that have explored the relationship between student attributes, student/institutional interactions and persistence are presented.

Historical Overview

George Vaughn (1985), former president of Piedmont Virginia Community College, in his brief history of the community college states, "Influenced by diverse forces such as World War II and industry's demand for trained technicians, the community college embodies Thomas Jefferson's belief that an education should be practical as well as liberal. Like Jefferson, the community college philosophy calls for education to serve both the good of the individual and society"(p. 1).

The Morrill Act of 1862, which established the land grant colleges, marked an important move of the federal government into higher education. The land grant colleges represented a major shift from a focus on liberal arts in higher education to a more practical education.

Several educational leaders advocated moving the first two years of university education to a separate institution (Vaughn, 1985; Cohen & Brawer, 1996). William Rainey Harper, as president of the University of Chicago in the late 1800s advocated for the formation of early junior

colleges. Following Harper's suggestion that weak four-year institutions drop the last two years of their program to become junior colleges, Stephens College of Missouri became an outstanding junior college (Stephens eventually returned to four-year status). Joliet Junior College, believed to be the oldest junior college in America today, grew from the addition of two additional years to the high school program in Joliet, Illinois in 1901.

In the early part of the twentieth century, legislation in California initially authorized high schools to offer postgraduate education and later provided state and county support for junior colleges.

With the founding of the American Association of Junior Colleges (AAJC) in 1920, the community college movement gained a national forum.

The Serviceman's Readjustment Act, commonly known as the GI Bill, provided a type of higher education scholarship for veterans. The GI Bill provided the basis for federal government financial aid for students in the years to follow. The existence of such aid programs had a huge impact on the enrollment and composition of the student body at community colleges (Vaughn, 1985; Cohen & Brawer, 1996).

In 1947, The President's Commission on Higher Education for American Democracy [The Truman Commission] maintained that barriers to higher education opportunity represented a threat to the fabric of democracy in America. The commission advocated the formation of a network of community colleges; "These community colleges would charge no tuition, serve as cultural centers for the community, offer continuing education for adults, emphasize civic responsibilities, be comprehensive, offer technical and general education, be locally controlled, and blend into statewide systems of higher education, while at the same time coordination their efforts with the high schools"(Vaughn, 1985, p. 8).

In 1960, the W.K. Kellogg Foundation provided grants to train community college administrators at ten four-year universities. Edmund Gleazer, president of the AAJC from 1958 to 1981, presided over the boom years in community colleges. Gleazer was a promoter of lifelong learning and community-based education. As a result of social movements and the availability of financial aid, the entry of minorities and women into higher education represented society's commitment to educational access for a new segment of the country's population. "The enrollment of part-time students, new students, older students, and

working students have together created a student body that is far from typical when compared to traditional student bodies made up almost entirely of 18- to 24-year olds" (Vaughn, 1985, p. 15). During Gleazer's tenure, enrollments in the community colleges increased from 585,000 to 4,826,000. More than half of all college, first-time freshman attended two-year colleges in 1983.

With the passing of Proposition 13 by the voters in California in June of 1978, the amount of revenue available to support community colleges locally was significantly reduced. Vaughn (1985) observed the emergence of a national call for educational quality in the early 1980s and notes a lack of attention to community colleges in national reports on education. Vaughn predicts, "This issue of quality has the potential for causing community colleges to exclude some students, partially closing the open door" (p. 19).

> Today, there is increased awareness of the costs of attrition, both to students and to institutions. Students who drop out have wasted time, energy and money; furthermore, the negative college experience may discourage them from trying again elsewhere. From the institution's perspective, improving retention - reducing attrition - is one way to combat declining enrollments and the accompanying decreases in funding that now threatens so many colleges and universities. (Lenning, Beal & Sauer, 1980b, p. 1)

Accountability

According to Roueche, Boswell and Roueche (1997) American colleges and universities enjoyed a high degree of freedom in choice of educational practice without a high degree of accountability over the majority of their existence. The public tended to support the colleges without questioning their effectiveness. These institutions were seen as essential to the well being of the country.

A Nation at Risk (National Commission on Excellence in Education, 1983) called the American public education system to task for its "mediocre educational performance" (p. 5). In 1991, the Secretary's Commission on Achieving Necessary Skills explored the role and effectiveness of educational institutions in preparing citizens for the workforce (U.S. Department of Labor, 1991).

Ewell (cited in Roueche et al., 1997) suggests that higher education is in a state of crisis - with accusations that self-evaluations are inadequate and self-serving. He also states that abuse, mismanagement and fabrication are believed to be common in college accrediting systems.

Roueche et al. (1997) assert that federally funded programs such as Pell grants, the GI Bill, and student loans, have increased calls for institutional accountability. Sydow and Sandel (1998) report that,

"According to a formula developed by the Noel-Levitz Group, based on Mountain Empire Community College's current first-to-second-year dropout rate, the total net revenue gained by retaining one first-year student to graduation amounts to $4,025. And the college would realize a total dollar value savings of $98,588 by reducing the first-to-second-year dropout rate by 10%" (p. 636). Because projections indicate that high school graduating classes (and college enrollment) will increase significantly in the next ten years these calls for accountability will likely increase (Roueche et al., 1997).

Currently, one is able to hear a call for accountability of public educational institutions at all levels.

> It is clear that community colleges, in particular, are at the most critical juncture of their lives. In the face of more external scrutiny and criticism than they have experienced to date, they are challenged not only to meet the goals set in their mission statements, but to prove that they have done so to the satisfaction of an unbelievably diverse mix of critics and judges. The challenges posed by current questions about accountability and institutional effectiveness are literally lines drawn in the sand. Higher education and the public stand on either side (Roueche et al., 1997, p. 4).

Institutional Effectiveness

In the mid-eighties, the Southern Association of Colleges and Schools (SACS) identified "institutional

effectiveness" as a criterion by which to identify areas of relative strength and weakness for schools (Ewell, cited in Roueche et al., 1997). To that end, educators and policymakers began to focus on student outcomes as effectiveness indicators. Participants in a 1995 meeting of educational leaders, politicians and business people (Educational Commission of the States, 1995) identified the following desirable student outcomes:

- Higher order, applied problem-solving abilities
- Enthusiasm for continuous learning
- Interpersonal skills, including communication and collaboration
- A strong sense of personal and community action
- Ability to bridge cultural and linguistic barriers
- A well developed sense of "professionalism"(pp. 6-7)

In the Doucette and Hughes (1980) monograph addressing institutional effectiveness, the authors argue that the domains of community college performance specific to the institutions mission statements need to be examined, given the unique nature of each institution. These domains include: college transfer, career preparation, basic skills

and developmental education, and community service functions. Issues of access and student development are also typically understood to relate to the mission of the community college, historically.

While the goal of individualizing effectiveness measures, as suggested by the authors in Doucette and Hughes (1990) is an admirable one, the practical limitations to regional policymakers should be apparent. The audiences for the data on assessed outcomes are many and varied: college faculty and administrators, legislators, employers, potential students and the general public. In 1994, the Community College Roundtable identified the following thirteen core indicators of institutional effectiveness for community colleges:

- Student goal attainment
- Persistence (fall to fall)
- Degree completion rates
- Placement rate in the workforce
- Employer assessment of students
- Number and rate who transfer
- Performance after transfer
- Success in subsequent, related coursework
- Demonstration of critical literacy skills

- Demonstration of citizenship skills
- Client assessment of programs and services
- Responsiveness to community needs
- Participation rate in service area (pp. 16-25)

While these more or less measurable indicators address common elements in the mission of all community colleges, indicators specific to the individual elements of a community college's mission statement should be considered when conducting research at a particular institution. Ewell (cited in Roueche et al., 1997) recommends research methods appropriate to the unique mission of community colleges, and states that they should:

- Develop longitudinal information on student experience and performance
- Carefully target assessments of student performance
- Capitalize on collecting additional information at existing points of contact with students
- Develop better mechanisms for getting information to those who need it (p. 13).

Doucette and Hughes (1980) suggest student enrollment records and grades in courses may be used to answer the

questions: "Are students completing courses and progressing through programs at reasonable rates?", "Are students progressing to and succeeding the next level of education?", (p. 25) and "Is assessment of student skills upon entry effectively placing students in appropriate courses and programs?" (p. 43).

The measures of institutional effectiveness are many and varied. Clearly, they are meant to address calls for institutional accountability. However, "The purpose for determining measures of effectiveness should be prescriptive, not punitive" (Doucette & Hughes, 1990, p. 48).

Persistence/Retention

Postsecondary education generally avails the attendee of diverse and numerous benefits. According to the National Center for Educational Statistics (NCES) (2001), higher levels of career earning, increased likelihood of reading books, magazines and newspapers, and even better health are associated with greater educational attainment. The fact that nearly all 1992 high school graduates (97 percent) reported in 12th grade that they expected to continue their education at some point; and 79 percent planned to enroll immediately after finishing high school,

as reported by Berkner and Chavez (1997), seems to reflect the importance that those students, and we as a nation, attribute to higher education.

While much is known of the benefits of postsecondary education, the implications of leaving school, for the individual and the educational institution, are the object of inquiry here. According to Tinto (1987), enrolling and then leaving without completing a program of study can have negative monetary and occupational consequences for the student. Tinto pointed out that not all forms of leaving are bad. A student who leaves after meeting his educational goal or who leaves to transfer to another institution must be thought of in a different way than the student who drops out of the educational system altogether. The term "stopout" is used to describe a portion of students, initially viewed as dropouts, who will return to school after a period to complete their studies. Sheldon (1982) identified three types of attrition among students in California community colleges. The first, "positive attrition," involved students who departed after meeting their objectives or transferred to another institution. The second type, "neutral attrition," was associated with students who left because of a job or a scheduling conflict. Finally, "negative attrition" included

academically unprepared students or those who were not sufficiently motivated to succeed in their studies. Sheldon maintains that only the "negative attrition" is under the control of the college. Understanding and addressing this negative attrition should be the focus of efforts on the part of individual institutions.

When several groups of indicators were compared in terms of relative importance to these institutions, persistence was considered a third tier item of importance (less important than cost containment, student goal attainment, performance after transfer and growth - of equal importance to critical literacy skills and responsiveness to community needs and - more important than degree completion rates and participation rate in the service area (Johnson, 1997, p. 39).

Dale Parnell (1986), past president of the American Association of Community and Junior Colleges, maintains that while the open door admissions policies of community colleges are meant to encourage access, these policies are often misinterpreted to mean little attention needs to be given to academic preparation for these colleges. Parnell (1986) states, "The open-admissions policy has given some high school students an unintended negative signal. For

these students the open door becomes a revolving door - easy in and quickly out" (p. 110).

Responses from community colleges surveyed to determine current practice indicate that degree completion rates and growth are routinely tracked by more than 90 percent of colleges. Persistence and cost containment were tracked by approximately 88 and 89 percent of colleges surveyed, respectively (Johnson, 1997). Johnson states, "The retention of students to goal attainment may be the community college's greatest challenge. In the opinion of our critics, we have not done a very good job with retention" (p. 62).

The reason for the focus on student persistence or student attrition observed at many institutions is summarized by Phillips (1982),

> The situation is clear: community colleges are being asked to do more with less. Given that reality, college researchers and planners are being forced to move rapidly into the study of attrition. The emphasis on attrition comes from two sources. First, state legislatures are justifiably upset at seeing tax dollars spent on students who derive no tangible benefit (i.e., a degree, a job, a promotion, etc.) from their time spent at a community college. High attrition rates - in some cases 40 to 50 percent or greater - are extremely alarming when looked at out of context. From a pure funding standpoint, attrition means waste, and legislatures cannot be expected to 'read between the lines' and realize that at least some of the attrition is not waste at all, but rather a signal that some students left before obtaining a degree because they never wanted one in the first

> place. Second, even when college personnel look at attrition figures, they see evidence that the open door of the community college may well be 'revolving' too fast for some of their students" (p. 2).

Theoretical Models

Conceptual models for the attrition process

The literature on student retention includes several models that attempt to conceptualize the student departure/persistence behavior. The earliest model to address student retention/attrition was developed by Spady (cited in Bean and Metzner, 1985). Spady adapted a model of suicide theory developed by Durkheim to explain student attrition. Spady believed that a student's background and university interactions would, if positive result in an increased likelihood of a student's decision to stay in school. Negative interactions would result in a suicide-like decision to leave the institution.

Tinto (1975; 1993) proposed an interaction/integration model of student departure (Figure 1) based on the work of Durkheim and Spady. Tinto argued that acceptance or rejection during the process of a student's integration into the academic and social environments at a university would provide the basis for a decision to stay or leave.

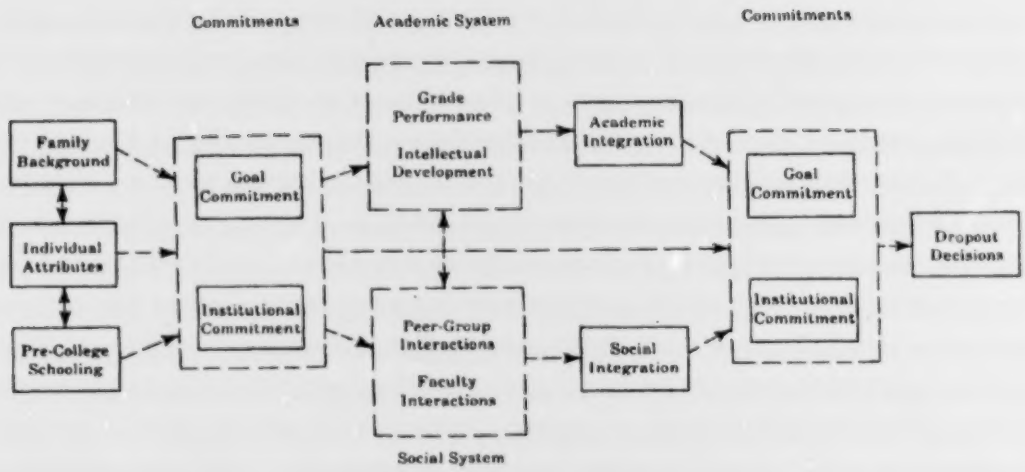

Figure 1. Interactive model of student attrition (Tinto, 1975, p. 95)

Tinto was particularly concerned with the long view of student persistence. For Tinto, a student's departure in the early years of a college career didn't represent the end of the story. A student might leave for a period of time and return to the same institution to complete at a later time - stopout. Student transfer from one institution to another might be viewed as institutional departure from one perspective. The institution would see even students, who had met their own goals, without completing a program of study, as non-persisters. Tinto wanted to focus attention on a group of students, for whom, departure meant that the student would depart the educational system entirely, never completing the intended educational/career goal.

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Tinto explained that individual student departures are generally explainable by either the dispositions of individuals, or the interaction experiences of the student at a given institution. The most important individual dispositions are intent and commitment. An individual brings these dispositions to the institution. While Tinto accepts the idea that individual student intentions might change over time, he maintains that in the long term, uncertainty of intent will lead to an increased likelihood of departure. Commitment to student goals at an institution can reasonably be expected to affect departure decisions. Speaking about intention and commitment, Tinto says, "These not only help set the boundaries of individual attainment but also serve to color the character of individual experiences within the institution following entry" (p. 39).

The terms adjustment, difficulty, incongruence and isolation each describes an outcome based on the experiences of an individual (Tinto, 1993). Adjustment difficulties are associated with separation from familiar circumstances, or the greater academic and social challenges of college. Difficulty often stems from inability to meet academic expectations. The incongruence, or isolation that a student might experience,

is particularly dependent on the types of interactions the student has within the institution (Tinto, 1982; 1993). Tinto allows that each of these outcomes may be influenced by attributes or skills of an individual.

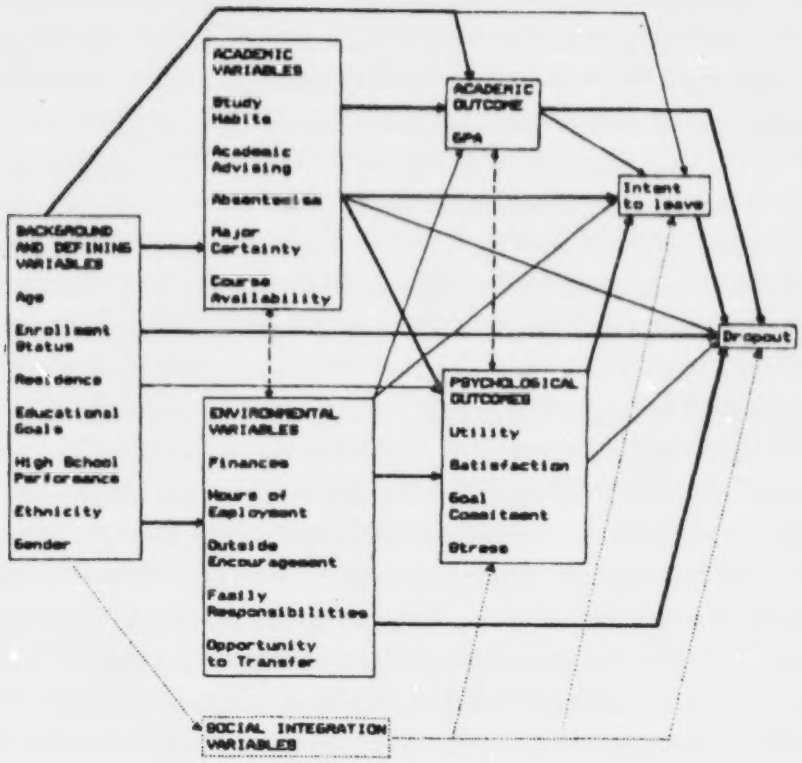
Pascarella and Terenzini (1980) attempted to verify Tinto's model by attempting to predict student persistence by measuring social and academic integration while holding students' background characteristics constant. A longitudinal study involving approximately 1700 students' responses to thirty-four, Likert-like items at Syracuse University led Pascarella and Terenzini to conclude that academic and social integration were indeed important to student persistence. Furthermore, the authors suggested the contact between student and faculty in a wide range of settings, played a particularly important role in academic and social integration of students.

The interaction models proposed by Spady (cited in Bean and Metzner, 1985), Tinto (1975) and Pascarella and Terenzini (1980) were each developed with the traditional, residential college student in mind.

Bean and Metzner (1985) offered a model of nontraditional student attrition (Figure 2). Nontraditional students are defined as having at least one of three attributes: part-time enrollment status, older than 24 or

nonresident at the school (commuter student). The authors say, "Residence is, in fact, the most critical variable distinguishing nontraditional students from traditional students" (Bean and Metzner, 1985, p 495). These researchers believed that social integration into the college was less important for the nontraditional student. Instead, they suggested that departure decisions would be based on the influence of background, academic and environmental factors. They further argued that environmental factors and psychological outcomes could compensate for a student's academic shortcomings. For example, a student who was struggling academically and strongly committed to an educational goal (goal commitment being a psychological outcome), would be less likely to leave school.

Mason (1998) developed a modified version of the Bean and Metzner model to explain persistence among African American urban male community college students by giving greater attention to psychological outcomes that might influence persistence.



Key: → Direct effects
→ Direct effects presumed most important
•-• Compensatory interaction effects
•···• Possible effects

Figure 2. Interactive model of student attrition (Bean & Metzner, 1985, p. 491)

Learning process models

Biggs and Moore (1993) developed an interactive, three-component model (Presage, Process and Performance) to explain the complex process of student learning. According to this model presage factors include pre-existing student variables (prior knowledge, abilities, culture, etc), as well as contextual and situational variables (subject area,

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teaching method, time constraints, etc). The ways in which the student perceives and behaves with respect to the learning environment and existing student attributes are referred to as learning process variables. A student's intentions, goals and commitment (process variables) are all likely roots of individual persistence according to Tinto (1987). The Biggs model suggests a complex relationship between student attributes, environmental factors, learning process variables and student performance outcomes (exam results, GPA, satisfaction levels and student persistence).

Self-regulated learning (SRL) is a construct that suggests that students may regulate different dimensions of their learning: their observable behavior, their motivation/affect and their cognition (Pintrich, 1995). Self-regulated learners attempt to control each of these three learning dimensions. The SRL student has some personal goal by which he regulates his own progress and the student - not some third party - is the driving force behind student behaviors. A self-regulated learner exercises active control over various resources (such as time, place to study, study groups), controls and changes motivational beliefs (such as self efficacy, goal

orientation, anxiety and emotions) and controls cognitive strategies for learning.

Self-regulation is not a characteristic that students are born with or only develop early in life. Students can learn to be self-regulated learners at any time. Teachers can provide students with opportunities for self-regulation and model the same (Pintrich, 1995).

A description of the salient features of (a) the attrition/persistence models that have been put forward to explain the relationship between student characteristics, institutional characteristics, interactions and persistence and (b) learning process models reveals many shared features. The existing understanding of the learning process might explain a portion of the process by which a student becomes academically integrated as suggested in the attrition/persistence models.

Noel (1985) suggests that programs and services that are linked to outcomes of general education might be expected to impact persistence. These general education outcomes involve: helping students develop skills and motivation necessary to graduate, and helping students acquire the abilities to read, think and compute - abilities needed to function effectively in adult roles.

For a study of persistence among nontraditional community college students, the Bean and Metzner model of attrition is most appropriate. Bean and Metzner (1985) argued for further research with nontraditional students that is based on a theory, that does not emphasize social integration, that focuses on subgroups of students and considers the effects of psychological outcomes and intent to leave on attrition/persistence.

Factors Related to Persistence

Several variables, loosely categorized as one of four types, have been considered in an effort to better understand their relationship to the persistence/attrition behaviors (Lenning, Beal and Sauer, 1980b). Lenning et al. (1980b), in a meta-analysis of existing attrition literature, listed several factors that may be related to student attrition or retention: student characteristics (academic and demographic), institutional characteristics, interactions (between individuals and the institution), and external forces. Variables that might be used in a predictive model of persistence are of particular interest.

Academic and demographic factors of students

Feldman (1993) studied the relationship between pre-enrollment factors including; gender, ethnicity, age, enrollment status, goals, basic skills need and high school GPA. Univariate and multivariate methods were employed in the analysis of the data. She reported that all factors, except for remedial need, appeared to be related to persistence when a univariate model was employed. Using multivariate techniques, she concluded that high school GPA was the single most important predictor of fall-to-fall persistence in community college students. Feldman also observed a significant relationship between full-time/part-time enrollment status and persistence. Grosset (cited in Feldman 1993) found a relationship between ethnicity, admission test scores and type of school attended - public vs. private and persistence.

Tharp (1998) conducted a study to determine if student background characteristics from student enrollment data could be used to predict student persistence. Two fall-entering cohorts were tracked longitudinally over 4 years. The definition of persistence used by Tharp is of particular interest: "In this study, the dependent variable (persistence) was a ratio of degree completion, defined as the total number of semester hours completed toward an

associate or baccalaureate degree in the four year period examined" (p. 283). Tharp's considered background variables included: first semester GPA, first semester hours (enrollment status), high school percentile, beginning/transfer status, 2-year degree/4-year degree, sex, age, ethnicity, marital status, financial aid and major. Tharp found that, in order of importance, semester hours, beginning/transfer, first semester GPA and degree sought - 2-year degree/4-year, explained most of the variance in the dependent variable persistence.

Mason (1998) identified educational goals as having a strongly positive correlation to persistence among urban, African American males in community college. Mason used one-way analysis of variance to compare groups of persisters and nonpersisters in relation to academic, background, or environmental variables and academic or psychological outcomes. Mason maintained that the community where a student resides and his perceptions of that community, was strongly associated with psychological outcomes (stress, goal commitment and hopelessness/ helplessness), which might influence a desire to leave. Mason reported that educational goals were the only significant background variable associated indirectly with persistence. Mason explains, "Those that have clearly

articulated educational goals have a positive approach to their environment (both community and college) and a low level of helplessness/hopelessness. This leads to a higher level of satisfaction, lower stress, greater goal commitment, and the ability to internalize those goals. All this leads to a higher persistence level" (p 757). Mason said, "High levels of certainty about educational goals were found to lead to lower absenteeism, to longer hours of study and to a greater certainty of major, which yields higher values for grade point average (GPA), which is negatively related to intent to leave and strongly related to persistence"(p 757).

House (2000) focused on self-beliefs as well as academic background variables as predictors of grade performance. When parental education, high school curriculum, social goals, achievement expectations, desire for recognition, academic self-concept, and financial goals were considered in relation to grade performance, only academic self-concept and financial goals were found to have some influence. Academic self-concept is the total of students' ratings of overall academic ability, drive to achieve, mathematical ability, writing ability and self-confidence in intellectual ability.

McGrath and Braunstein (1997) found no relationship between demographic, academic, financial and social factors. Of particular interest are the social factors considered which included: academic and social motivation, general coping skills and receptivity to support services.

Makuakane-Drechel and Hagedorn (2000) used logistic regression to analyze the relationship between student demographic and enrollment characteristics and students' persistence in Hawaiian community colleges over the course of five years. The authors listed four factors (listed greatest to least important) associated with persistence: college GPA, financial aid status (those with aid are positively correlated), the number of hours, for which a student was enrolled, and reverse transfer status (starts community college with credits from a four-year college). Makuakane-Drechel and Hagedorn (2000) also found attendance at an urban high school to be related to persistence.

Fischbach (1990) considered age, gender, high school percentile, ACT scores and intent as factors that might predict persistence. Intent - which was a self-reported item - included as responses: "prepare for new career, improve skills, explore courses, transfer to a four-year school, remedy basic skills, prepare for HS diploma, and other" (p. 8). Fischbach reported that withdrawal rate,

operationally defined as a ratio: "hours from which the student formally withdrew divided by the total number of hours attempted" (p. 8), was recorded because it was thought withdrawal might be related to success. Survey data were collected for students who successfully completed a two-year degree. She found however, that only college GPA (considered an integration measure) and class rank, or decile seemed to be related to persistence.

In an institutional self study at mountain Empire Community College, Sydow and Sandel (1998) reported that students aged 20 to 24 were almost twice as likely to withdraw from classes as older students. Sydow and Sandel's findings are consistent with Feldman's (1993) report that age and ethnicity are related to persistence among community college students.

Research by Cejda, Rewey and Kaylor (1998) found that cumulative GPA and upper division status were strong predictors of degree completion for students transferring from a two-year to a four-year liberal arts college. The researchers had set out to identify "easily ascertainable, pre-transfer characteristics" (p. 677) of students and the relationship of those characteristics to degree completion. Notably, the authors excluded academic and social integration, external factors such as family, finances and

jobs, self-motivation, clear goals, and college involvement because these factors were not readily ascertainable. High school GPA, gender and ethnicity were also excluded as variables in the study because of inconsistent findings as to their significance to persistence and degree completion. One-way analysis of variance was used to compare groups of native and transfer student persisters and nonpersisters with respect to community college GPA and degree completion over a five-year period.

Institutional characteristics and interaction factors

Braxton, Milem and Sullivan (2000) used a longitudinal study of approximately 700 first-year students to explore the relationship between active learning and persistence. The authors considered six sets of variables in their study: student background characteristics, initial and subsequent institutional commitments, social integration, active learning and departure decisions. The student background characteristics used were; race, gender, parental income, parental educational level, high school GPA, and SAT composite score. Active learning was defined by the extent to which the following classroom practices were present; class discussions, knowledge level exam questions, group work and higher order thinking activities.

Braxton et al. say, "Active learning is conceptually distinct from academic integration, for active learning and other classroom-based experiences are antecedents of academic integration" (p. 571). Students were asked about their intent to stay or leave - the persistence measure. Intent to leave is highly predictive of actual leaving behavior according to Bean and Metzner (1985).

Braxton et al. (2000) found that three of four measures of active learning were significantly related to student persistence (only group work was found not to be related to persistence). Although this research was limited to a single institution, the authors maintained that, "Single institutional studies are more in keeping with the underlying assumptions of Tinto's theory as it seeks to explain the longitudinal process of student departure within a given college or university" (p. 581).

Gloria, Kurpius, Hamilton, and Willson (1999) examined the relationship between social support - the support of family and friends or mentoring, university comfort - perception of the environment, cultural congruity or academic stress and self-beliefs, self-efficacy or self-esteem. According to the authors, "Quality of life at an academic institution includes students perception of the university environment, perceptions of cultural fit within

the environment and stress created by the environmental context" (p. 257). The authors reported finding a significant relationship between each of these factors and persistence decisions.

Braxton, Bray, and Berger (2000) looked for a relationship between student background variables, faculty teaching skills and students' social integration, institutional commitment and intent to reenroll. Students' perceptions of faculty teaching skills were found to have positive effects on social integration and intent to reenroll.

Kennedy (2000) wondered if there was a relationship between students' adjustment (academic, social, personal, and emotional), institutional attachment, SAT scores, high school class rank, college GPA, self-efficacy and help seeking behaviors and persistence after a year of college. He also sought to establish if a significant difference existed between the predictive results of factors used in the first six weeks of the school year and factors used for assessment in the final six weeks of the school year. Student persistence was based on fall enrollment records for the subsequent fall semester. Stepwise discriminant function analysis was used to analyze the data. Kennedy found that adjustment, GPA and attachment were related to

persistence. Kennedy also provided a useful diagram of the role of feedback on perception of academic performance and academic adaptation (Figure 3).

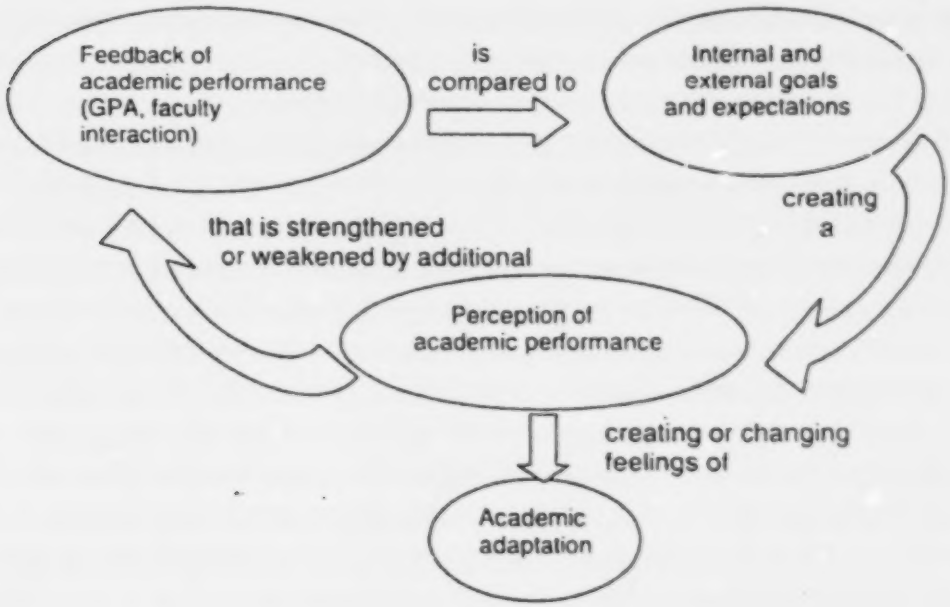
Feedback of academic performance (GPA, faculty interaction)
is compared to
Internal and external goals and expectations
creating a
that is strengthened or weakened by additional
Perception of academic performance
creating or changing feelings of
Academic adaptation

Figure 3. Model of the academic adaptation process (Kennedy, 2000, p. 8)

Rhodes and Carifio (1999) found differences in students' attitudes towards a freshman orientation course based on student age in a qualitative study. This attitudinal variance was believed to account for differences in the perceived effectiveness of the course.

Voorhees (2000) reported a positive relationship between credits completed and intention shifts. Furthermore, a negative relationship was reported between credits completed and perceptions of goal attainment.

An institutional self-study at Northern Virginia Community College (1998) revealed a relationship between enrollment in developmental courses and retention - namely that those freshman students who enrolled in a developmental course were more likely to be retained. The same study found that Asian students were most likely to be retained, Hispanic students showed greater likelihood of retention than Black students or White students.

Velasquez (1999) considered the relationship between students' sense of belonging to their colleges (one community college and two four-year colleges in the San Diego, California area), development of cultural identity and subsequent persistence. The author reported that a student's degree of biculturalism had a relationship to that student's sense of belonging. The author suggests that the Tinto model doesn't adequately explain persistence among minority students in predominantly white institutions. Velasquez suggests that curriculum, staffing patterns, and pedagogy can influence a student's development of biculturalism.

Summary

The student persistence problem has been addressed within its historical context. Theoretical frameworks

developed by early researchers have been presented to inform thinking on the nature of an interactive process of student persistence. Studies relating student characteristics and interactions to persistence have been described. Chapter 3 provides an overview of the research methodology for the study.

CHAPTER 3

RESEARCH METHODOLOGY

Design

This study was descriptive in nature. An ex post facto design was followed. This research investigated whether pre-existing conditions (the independent variables) were associated with differences among subjects measured on dependent variables.

Instrument

The *Learning and Study Strategies Inventory* (LASSI)(Weinstein, Palmer & Schulte, 1987) is in use at over 1,300 institutions throughout the United States according to statement by H&H Publishing Company (1994). The LASSI is a set of 77 questions (see Appendix A) designed to measure ten student controlled attributes: anxiety (ANX), attitude (ATT), concentration (CON), information processing (INP), motivation (MOT), selecting main ideas (SMI), self-testing (SFT), study aids (STA), test strategies (TST), and time management (TMT). Weinstein, Palmer & Schulte (1987) provided the following

descriptions of the LASSI scales and sample items in a pamphlet accompanying the assessment:

- Attitude addresses attitude and interest in college. Are educational goals clear? Is school worthwhile or important? Sample items: I feel confused and undecided as to what my educational goals should be. I only study the subjects I like.
- Motivation measures a student's diligence and willingness to work hard. Does the student stay up-to-date on assignments or easily loose interest in classes? Sample items: When work is difficult I either give up or study only the easy parts. I set high standards for myself in school.
- Time management focuses on the extent to which a student is organized. Does the individual effectively schedule activities? Sample items: I only study when there is the pressure of a test. When I decide to study, I set aside a specific length of time and stick with it.
- Information processing includes several areas such as the use of mental imagery, reasoning and comprehension monitoring. Sample items: I translate what I am studying into my own words. I try to think through a

topic and decide what I am supposed to learn from it rather than just reading it over when studying.

- Test strategies looks at the approach to preparing for and taking an examination. Do they prepare appropriately? Do they try to integrate material from different sources? Sample items: I have difficulty adapting my studying to different types of courses. In taking tests, writing themes, etc., I find I have misunderstood what is wanted and lose points because of it.
- Anxiety addresses students' worries about performance. Do a student's worries affect concentration? Does the student become discouraged because of grades? Sample items: Worrying about doing poorly interferes with my concentration on tests. I am very tense when I study.
- Concentration is a measure of student's ability to focus on academic tasks. Are they easily distracted? Are they attentive to school tasks? Sample items: I concentrate fully when studying. I find that during lectures I think of other things and don't really listen to what is being said.
- Selecting main ideas addresses the student's ability to discriminate between very important and less important information. Sample items: I have difficulty

identifying the important points in my reading. Often when studying I seem to get lost in the details and can't remember the main ideas.

- Study aid scale items measure the degree to which students create or use support techniques to help them learn and remember. Sample items: I use special study helps, such as italics and headings that are in my textbooks. When they are available, I attend group review sessions.
- Self-testing involves aspects of comprehension monitoring in preparing for tests. Sample items: I stop often while reading and think over what has been said. I try to identify potential test questions when reviewing my class material.

The highest possible score for eight test items associated with each area is 40 (except selecting main ideas which has only 5 items and a high score of 25). A high score indicates a high degree of the attribute except in the case of anxiety - a high anxiety score represents a low amount of anxiety.

The test has been shown to measure three constructs: (1) Effort-related activity - TMT, CON, ATT, and MOT, (2) Goal orientation - ANX, TST, & SMI and (3) Cognitive activity - INP, STA & SFT (Olivarez & Tallent-Runnels,

1994 cited in Everson et al, 2000 and Olejnik & Nist, 1992 cited in Everson et al, 2000).

According to the publisher, the LASSI can serve as a pre-post achievement measure for students participating in programs or courses focusing on learning strategies and study skills.

A summary of LASSI properties is presented in Table 1. Estimates of internal reliability for the ten scales range from 0.68 to 0.86. Test-retest correlations (4 week period) ranged from 0.72 to 0.85 for the ten scales.

Table 1

LASSI Scales Summary Information

LASSI Scale	**Coefficient alpha**	**Test-retest**	**Items**
Attitude	0.72	0.75	5,14,18,29,38,45,51,69
Motivation	0.81	0.84	10,13,16,28,33,41,49,56
Time management	0.86	0.85	3,22,36,42,48,58,66,74
Anxiety	0.81	0.83	1,9,25,31,35,54,57,63
Concentration	0.84	0.85	6,11,39,43,46,55,61,68
Information processing	0.83	0.72	12,15,23,32,40,47,67,76
Selecting main ideas	0.74	0.78	2,8,60,72,77
Study aids	0.68	0.75	7,19,24,44,50,53,62,73
Self-testing	0.75	0.78	4,17,21,26,30,37,65,70
Test strategies	0.83	0.81	20,27,34,52,59,64,71,75

Normative data for the LASSI is contained in a graph within the LASSI test packet and on the computerized version of the instrument. Students or college personnel compare student results with the normative data either provided with the assessment or specific to the institution. Unfortunately, the normative data available do not represent a community college population. However, additional normative information is compiled for the LASSI with each reported study.

Population

A population of community college students was sampled for this study. Students in the sample had chosen to participate in a freshman orientation course. In order to register for the orientation course, students were supposed to be: recent high school graduates (or GED recipients), enrolled full-time (12 or more units) at the start of the 2001 fall semester, and indicated that their intent was to complete a course of study leading to certification, degree or transfer to a four-year institution. One hundred sixty nine (n = 169) students completed the LASSI as a requirement of the orientation program. One hundred twenty five (n = 125) students actually graduated in 2000 or 2001, were enrolled full-time, and had declared a major program.

The influence of student self-selection for participation in the orientation program is discussed in chapter 5.

Data Required

In order to carry out the proposed study, the following data was required:

1. A list of students who participated in the freshman orientation
2. LASSI scores in each category of the assessment for each student
3. Grades for courses in which each student was enrolled in fall 2001 (This was used to calculate the course persistence measure).
4. Indication of enrollment status for each of the original subjects as of start of spring semester 2002 (This was used to determine program persistence).

Data Collection

A request was made of the local community college to provide the data, which was required to achieve the study's purpose, from college records. The LASSI was administered at the start of the fall semester 2001 in the learning

center. The assessments were scored and data compiled by the researcher (as an employee of the college).

Data Analysis

In order to answer the first research question, "What is the nature of the relationship between process variables (LASSI sub scores) and students' course persistence?" multiple regression was employed.

In order to answer the second research question, "What is the nature of the relationship between process variables (LASSI sub scores) and students' program persistence?" multiple regression was utilized.

A course persistence percentage score was calculated for each subject using the following formula: number of credits completed with a grade of A, B, C, D, P or S divided by the total number of credits attempted times 100 (including R, U, F, I, or W). For example, if a student earned the following grades in each of five, three-credit courses: A, A, B, F and W, then the persistence score was 60%. The LASSI scores were then analyzed together with the course persistence scores using a multiple regression program. Although GPA for a semester was a similar measure, GPA did not reflect the relationship between achievement

and intent that I call course persistence since grades of W, I, etc were not calculated in the GPA.

Program persistence was indicated by continued registration of students from the fall 2001 term to the spring 2002 term. Although program persistence was a dichotomous variable, multiple regression was used to explain variability due to several independent variables and combinations of these variables to answer the second research question. The LASSI sub scores and the spring 2002 enrollment status were used.

CHAPTER 4

RESULTS

The purpose of this study was to determine the relationship between learning process variables, as measured by the LASSI, course persistence and program persistence. The data were analyzed using the Statistical Package for the Social Sciences (SPSS Version 10.0). The results of the data analyses are presented here.

In order to understand the extent to which one might reasonably expect to distinguish between course persistence and program persistence, the Pearson correlation coefficient was employed ($r = 0.479$, $p < 0.01$).

Because strong correlations between predictor variables may affect a multiple regression model, the correlations between scales of the LASSI were examined. The correlations coefficients are presented in Table 2. The correlations between LASSI scales ranged from 0.178 (ANX-INP) to 0.790 (MOT-CON).

Table 2

Correlations between LASSI scales (n = 125)

Variable	ATT	MOT	TMT	ANX	CON	INP	SMI	STA	SFT	TST
ATT	1									
MOT	.726	1								
TMT	.556	.673	1							
ANX	.334	.322	.324	1						
CON	.729	.790	.771	.431	1					
INP	.465	.516	.446	.178*	.513	1				
SMI	.580	.635	.566	.494	.741	.429	1			
STA	.312	.420	.475	.233	.484	.584	.350	1		
SFT	.519	.680	.688	.242	.680	.706	.575	.637	1	
TST	.678	.655	.533	.581	.738	.354	.730	.270	.490	1

All $p < 0.01$ except, $^*p < 0.05$ level

Note: ATT = Attention, MOT = Motivation, TMT = Time Management, ANX = Anxiety, Con = Concentration, INP = Information Processing, SMI = Selecting Main Ideas, STA = Study Aids, SFT = Self Testing, TST = Test Strategies

Stepwise multiple regression was employed to address the first research question: What is the nature of the relationship between process variables (LASSI sub scores) and students' course persistence? Table 3 presents the correlations between each of the LASSI scales and course persistence. Correlation values for each of the LASSI subscales and course persistence (CP) were all positive and ranged from 0.091 to 0.262. Only motivation and concentration were significant predictors at the $p < 0.01$ level. Table 4 displays the results of step-wise multiple regression analysis of course persistence on LASSI scales. Motivation (MOT) was the only factor included in the model to predict course persistence.

Table 3

Correlations between LASSI scales and course persistence (n = 125)

Variable	CP - Course Persistence
Attention	0.126
Motivation	0.262**
Time Management	0.092
Anxiety	0.162
Concentration	0.242**
Information Processing	0.135
Selecting Main Ideas	0.099
Study Aids	0.091
Self Testing	0.121
Test Strategies	0.120

**p < 0.01

Table 4

Stepwise Multiple Regression. Dependent variable, Course persistence; Independent variables, *Learning and Study Strategies Inventory* (LASSI) scales (n = 125)

Step	**Variable**	**R**	**R^2**	**Degrees of Freedom**	**F***
1	MOT	0.262	0.069	124	9.078

*p < 0.003

Step-wise multiple regression was employed to address the second research question: What is the nature of the relationship between process variables (LASSI sub scores) and students' program persistence? Table 5 presents the correlations between each of the LASSI scales and program persistence. The correlation values for each of the LASSI subscales and program persistence (PP) were positive and ranged from 0.091 to 0.262. Only anxiety (ANX) and self-testing (SFT) are significant predictors at the $p < 0.05$ level. Table 6 displays the results of step-wise multiple regression analysis of program persistence on LASSI scales. Anxiety (ANX) was the only factor in the model to predict program persistence.

A summary of the LASSI sub scores for a normal population and the community college students assessed is given in Table 7. Only median scores, for the LASSI scales, are provided by the publisher for comparison to individual scores. Both median and mean scores are provided for the entire group of community college students and groups that were persistent or not persistent.

Table 5

Correlations between LASSI scales and program persistence (n = 125)

Variable	PP - Program persistence
Attention:	0.088
Motivation	0.088
Time Management	0.126
Anxiety	0.187*
Concentration	0.154
Information Processing	0.117
Selecting Main Ideas	0.048
Study Aids	0.087
Self Testing	0.177*
Test Strategies	0.163

*Significant at $p < 0.05$ level

Table 6

Stepwise Multiple Regression. Dependent variable, Program persistence; Independent variables, *Learning and Study Strategies Inventory* (LASSI) scales (n = 125)

Step	**Variable**	**R**	**R^2**	**Degrees of Freedom**	**F***
1	ANX	0.187	0.035	124	4.462

*$p < 0.037$

Table 7

LASSI scales median score summary

Median/mean scores	ATT	MOT	TMT	ANX	CON	INP	SMI	STA	SFT	TST
LASSI normal group	32/--	31/--	23/--	26/--	25/--	26.5/	18/--	24.5/	25/--	30/--
Community college students n = 125	33/32	32/31	26/25	27/26	28/27	28/28	18/18	23/24	26/26	30/29
Program persistent n = 113	33/32	32/31	26/25	27/26	28/27	28/28	18/18	23/24	26/27	30/29
Not program persistent n = 12	31/30	29/29	24.5/ 23	21.5/ 22	24.5/ 24	27.5/ 26	18/18	23/23	24.5/ 23	28/26
Course persistent (>= 1 sd below mean CP score) n = 105	33/32	32/31	26/25	28/25	28/28	28/28	19/19	24/24	27/27	30/29
Not course persistent (< 1 sd below mean CP score) n = 20	31/31	26/27	25/24	21/23	24.5/ 24	27/26	17/17	23/23	23.5/ 24	28.5/ 28

CHAPTER 5

SUMMARY, DISCUSSION, and RECOMMENDATIONS

This study was conducted to better understand the problem of student persistence in a community college. The purpose of this study was to determine the extent to which measures of learning and study strategies were related to student persistence in a community college.

This chapter, in three sections, presents summary, discussion and recommendation for the research. In the first section, the review of the literature, research methodology and findings are summarized. The findings are discussed in light of the existing literature in the second section. In the final section, recommendations for further research and practice are offered.

Summary

Review of the Literature

A review of the existing literature provided a historical overview, explained existing frameworks and presented findings of previous research on student persistence.

Approximately one-half of all students enrolled in college programs attend community college (Cohen & Brawer,

1996). Students at community colleges are a much more diverse group than their counterparts at four-year colleges. While student retention was identified as a priority concern and studied at four-year institutions, attrition and retention of students in the community colleges was less well studied.

Since the founding of the predecessors of the community college system today, the mission and reach of the system has grown tremendously. With the passing of Proposition 13 in California in the late nineteen seventies, limited revenue for education has lead to calls for accountability. Student persistence emerged as a broadly used measure of institutional effectiveness.

Tinto (1975) proposed a model to explain student persistence in four-year colleges. Because the nature of the student body at non-residential community colleges was different, Bean and Metzner (1985) adapted elements of the Tinto model to explain attrition in a community college setting. A learning process model developed by Biggs and Moore (1993) pointed to a complex interaction between presage variables (pre-existing conditions), learning process variables and student performance outcomes (including persistence). In his discussion of self-regulated learning, Pintrich (1995) suggests that

successful learners will regulate overt behaviors, motivational beliefs (such as self efficacy, goal orientation, anxiety and emotions) and cognitive strategies. Academic variables and psychological outcomes of the Bean and Metzner model, explainable by learning processes described by Biggs and Moore and Pintrich's notion of self-regulated learning, were a major focus of this study.

Previous research on predictors of student success and verification of persistence models provided the basis for expecting a relationship between LASSI and persistence.

Methodology

In order to answer the research questions, persistence data and LASSI scores were obtained for 169 students at a local community college. Because age, enrollment status and intent were known to be strong predictors of student persistence, the sample was filtered to obtain a group n = 125 that showed no variance on graduation year (age), enrollment status (full-time) and declared major (intent). Course persistence scores for each student were calculated using the formula: number of credits completed with a grade of A, B, C, D, P or S divided by the total number of credits attempted times 100. Program persistence was determined by continued enrollment during the spring 2002

semester. Scores for each student on the ten scales of the LASSI were recorded: anxiety (ANX), attitude (ATT), concentration (CON), information processing (INP), motivation (MOT), selecting main ideas (SMI), self-testing (SFT), study aids (STA), test strategies (TST), and time management (TMT). These data were analyzed using step-wise multiple regression.

Findings

The findings of this study with respect to the first research question, which addressed the nature of the relationship between LASSI and course persistence, were:

1. Motivation and concentration were significant predictors of course persistence.

2. Motivation explained approximately 6 to 7% of the variance in measures of course persistence in the stepwise model. Concentration was excluded from the model.

With respect to the second research question, which addressed the nature of the relationship between LASSI and program persistence, it was found that:

1. Anxiety and self-testing were significant predictors of program persistence.

2. Anxiety explained about 3 to 4% of the variance in program persistence in the stepwise model. Self-testing was excluded.

Although a relatively strong correlation exists between course persistence and program persistence, differences of the included predictive variables in the regression models suggests these persistence measures are different.

While both motivation and concentration were shown to correlate significantly to course persistence, only motivation went into the prediction model. This may be explained by the strong correlation ($r = 0.790$) between motivation and concentration. According to Pedhazur (1997) and Lomax (1998), strong correlation between predictor variables will cause a redundant variable to be excluded from the prediction model. Redundancy might also explain exclusion of self-testing from the prediction model for program persistence.

Discussion

The variability in the levels of course and program persistence was extremely limited. Slightly fewer than 10% of the students in the study failed to return in the spring term (not program persistent, $n = 12$). Approximately 20 students had course persistence scores less than about 55%. Given the small level of observed variability in persistence, it is not surprising that the correlations

observed between LASSI scales and persistence measures were small.

All students who completed the LASSI had elected to participate in the orientation program. There may have been something about these students, as self-selected participants, that might be related to the observed high program persistence. The rate of fall to spring retention was approximately 90% for the group studied as compared to approximately 70% for freshman students for the past eight years (Office of Institutional Research Piedmont Virginia Community College, 2001) Tinto (1993) reported that there is ample evidence that student orientation programs can increase retention of freshman students.

For the students at the community college, the scores on the attention, motivation, anxiety, selecting main ideas, study aids, self-testing and test strategies are "close" to the normal median scores. Time management, concentration, and information processing scores were slightly above the LASSI norms. However, for students that withdrew from classes and/or withdrew from the college after the first term, seven of ten median scores for the non-persistent student groups were below LASSI norms and community college normal scores.

The findings of this study, that student motivation and anxiety were related to course and program persistence, were supported by the existing literature. This study confirmed a relationship between motivation, anxiety and student success (as measured by persistence). However, it is not clear exactly how motivation fits into the attrition models of Tinto (1975) or Bean and Metzner (1985). It may be that motivation is best thought of as a psychological outcome of academic integration.

Because of the diverse nature of the community college population and wide range of intended reasons for enrollment, the validity of persistence as traditionally measured (fall to fall, fall to spring or initial enrollment to program completion) has been questioned as a measure of institutional effectiveness in the community college. Course persistence was considered in this study to address this concern. Because it is assumed that a student intends to complete the courses for which he or she enrolls in a given semester, course persistence was considered a legitimate measure. Course persistence was more strongly correlated to an independent variable than was program persistence. This might be due to a more limited influence of external variable that might influence persistence over the relatively short span of time considered.

As Pintrich (1995) suggested student success appears to be related to the extent of successful self-regulation in the learning process. "Self-regulated learning is generally viewed as a fusion of skill and will. Skill refers to students' use of different cognitive, metacognitive and resource-management strategies, and will refers to students' motivational orientation in terms of goals, values, and expectancies" (Garcia, 1995). While it was generally recognized that motivation and anxiety affect student performance (as measured by GPA, typically), it may also be the case that academic experiences or interactions have significant impact on these variables. The LASSI item that says, "I get so nervous and panicky when taking an exam that I fail to answer questions to the best of my ability" is an example of anxiety that affects performance. In contrast, the statement "I am very tense when I study" might suggest that anxiety is the result of an academic interaction. In either case it appears that an intervention should exist which will address the anxiety concern.

Sapp (1996) reported that supportive counseling was effective in reducing worry and anxiety associated with testing among freshman students. This counseling method incorporated empathic reflecting and listening to help

students develop effective techniques for coping with anxiety.

Perrins (1999) found in a study of 97 college freshmen students that perceived stress and persistence in college were related to students' attachment style. Students with secure attachment style (positive image of self and/or others) were more likely to persist from term to term and reported lower levels of stress. Perrins' findings seem to suggest that interventions that seek to increase a student's connectedness to the institution might have the added benefit of reducing the student's stress level.

The great majority of research on predictors of students' success has used preexisting, static independent variables. This study, in using measures of the LASSI, addressed variables such as motivation and anxiety, which can be changed through intervention. In the community college used for this research, student persistence appears to have been influenced as well as predicted for a group of young, full-time students.

While previous research has suggested that the LASSI measures three constructs - effort-related activity, goal orientation and cognitive activity - only effort-related (motivation) and goal orientation (anxiety) measures were shown to be related to student persistence. Measures

related to cognitive activity didn't appear significant in the findings. It may be the case that before cognitive behaviors can be addressed, issues of effort and goal orientation must be addressed. Academic ability might be as much a function of influenced behavior as any innate, static ability. This lends support to the community colleges practice of admitting students without regard to previous academic performance.

Educational institutions have underemphasized attention to programs that promote clearly defining goals and associating effort with those goals as a means of addressing motivational issues. Because the LASSI motivational items concern behaviors that may be contrary to student goals, these behaviors might be identified and addressed by students as a means of fulfilling individual goals.

Recommendations

Because this study did not consider the extent to which other variables might have explained persistence for this group of students the following recommendations for future persistence studies are offered:

1. The study should be replicated using a larger

(n > 150) and varied sample of students. According to Pedhazur (1997), overestimation of the multiple R may occur when the ratio of predictors to sample size is small. It is suggested that at least fifteen subjects per predictor be used. A varied sample would allow one to determine the portion of variance in persistence explained by LASSI variables beyond that explained by age, enrollment status and intent. A portion of the sample should represent students who did not choose to participate in the orientation program.

2. The use of course persistence as defined in this research should be further investigated as a persistence measure.

3. Further research into the influence of institutional interactions on motivation and anxiety is recommended. In particular, how do a student's early experiences affect motivation and anxiety? Student motivation and anxiety levels might be a function of the quality of students' interactions in the college.

4. Future persistence studies might include assessments currently used for placement in developmental classes such as reading, writing and math placement tests. The extent to which this sort of existing student

information might be related to student persistence has not been well documented.

In light of the findings of this study which suggest a relationship between motivation, anxiety and persistence, the following recommendations for practice are offered:

1. Students should be surveyed near the end of a term about their intent to enroll in the next term. According to Bean and Metzner (1985) intent to enroll is a strong predictor of actual persistence behavior. Students not planning to return would still be available to give reasons for leaving.

2. Strategies to increase motivation and reduce anxiety among young community college students should be developed and implemented. These strategies might include: (1) student orientation programs which help students develop personal connections to other students, faculty and staff in the college (2) supportive counseling that integrates emphatic reflecting and listening and (3) career counseling that encourages self discovery of interests, values and abilities as well as educational planning.

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APPENDIX A

Learning and Study Strategies Inventory (LASSI)
(Weinstein, Palmer & Schulte, 1987)

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